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CACTUS AND SUCCULENT JOURNAL

Of the Cactus And Succulent Society Of America

Vol. XIV DECEMBER, 1942 No. 12

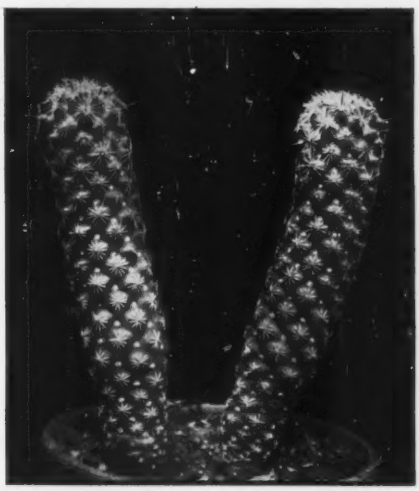

FIG. 95. Even cacti are taking on Victorious forms. They just won't grow any other way. This *Neolloydia rhaphidacantha* was photographed in the garden of R. W. Kelly. The pores (white dots) are very distinct in this plant.

CACTUS AND SUCCULENT JOURNAL

Published and Owned by the Cactus and Succulent Society of America, Inc., Box 101, Pasadena, California. A monthly magazine to promote the Society and devoted to Cacti and Succulents for the dissemination of knowledge and the recording of hitherto unpublished data in order that the culture and study of these particular plants may attain the popularity which is justly theirs. Subscription $3.00 per year. Foreign $3.00 per year by international money order. Membership in the Cactus Society free with subscription. Mail application to SCOTT HASELTON, *Editor,* Box 101, Pasadena, Calif. *Editorial Staff:* THE ENTIRE SOCIETY. Entered as Second Class Matter at Pasadena, Calif., under act of March 3, 1879.

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BINDING JOURNALS—VOL. XIV

During the month of January you may send in your 1942 JOURNALS for binding. Send $1.50 with your 12 issues to 136 W. Union, Pasadena, California, and they will be cloth bound to match the previous volumes and returned postpaid by February 15th. The January JOURNAL will carry the final notice and "deadline." (Be sure to remove Werdermann's reprints for binding in book form after it has been completed.) If any of your issues are missing, add 25c each and we will complete your volume. You may also bind at the same time any back issues of the JOURNAL by enclosing $1.50 for each additional volume.

The BULLETINS for 1942 (Dec. issue is in production) may be bound in with your JOURNAL, Volume XIV, at no extra charge or we will bind it separately in cloth and have it gold stamped and returned postpaid for $1. Those who do not have the 1942 BULLETINS may buy them at this time for $1 and have them bound in with their JOURNALS at no extra binding charge. Or send $2 and receive a cloth bound set of BULLETINS.

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THE AMATEUR CACTUS AND SUCCULENT SOCIETY OF BRITISH COLUMBIA

It is sometime since you received a report on the activities of the British Columbia Society. We can report progress. On June 20, we made our first public showing of plants, where at the South Vancouver Horticultural Society's Floral Show we staged over 250 plants; we received many comments on our plants, the members in attendance were kept busy answering questions about the care and growing of the different species. The Show was voted a success and the experience you get on your first show helps very much towards future shows, both mentally and materially.

Our meeting nights are taken up with lectures, demonstrations on potting and grafting. One outstanding speaker of the year was Dr. D. G. Laird of the University of British Columbia, who selected soils as his subject. During the summer months, visits are made to the collections of the different members, which we find is very educational, and we all get a pretty good idea of what plants each member has and what success they have had. At each third meeting of the Society, an auction sale of plants among the members is held; all plants and cuttings are donated by the Society—these evenings are readily looked forward to.

Plans for the winter program are for a larger public showing of cactus and succulent plants during the coming summer. This Society extends a hearty invitation to members of other Societies, when visiting in Vancouver, to meet with us on the third Friday of each month; you will be assured of a most hearty welcome.

President, Mr. A. E. Marchanton,
1st Vice-President, Mr. J. Benson,
2nd Vice-President, Mrs. H. P. Allen,
Secretary-Treasurer, Mr. R. G. Shaw,

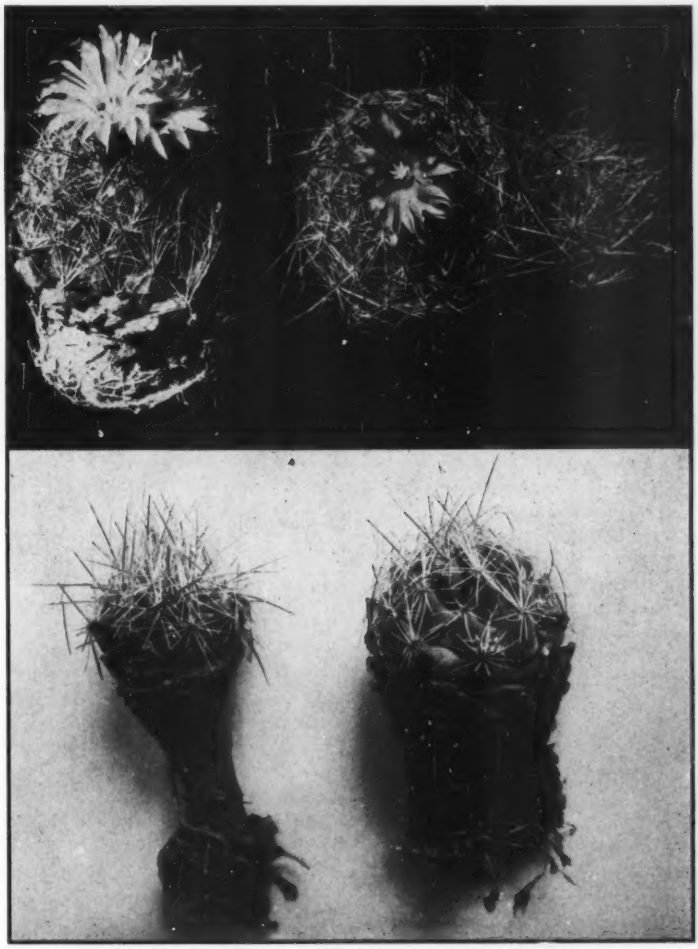


FIG. 96. *Coryphantha ramillosa* sp. nov. Photos by author.

Coryphantha ramillosa

A NEW SPECIES FROM THE BIG BEND REGION OF TEXAS

By LADISLAUS CUTAK
Missouri Botanical Garden

The romantic Big Bend Country of Texas, which lies within the giant curve of the Rio Grande River in the western part of the state, is one of the most fascinating wild regions left in the United States. Truly, it is not an unexplored region, because ancient trails and roads traversed it just a few centuries ago. However, the rugged domain has dropped back into the silence of the past and most traces of civilization and aboriginal life have become obliterated by the march of time. Today, very few people make inroads into this silent forbidding land, unless they be ranchmen, treasure seekers or scientists.

The Big Bend wilderness consists of an arid rocky desert, numerous rugged canyons, and several picturesque groups of mountains, of which the Chisos are perhaps the most prominent. The region is sparsely inhabited, less than 20,000 inhabitants scattered over its more than 4,500 square miles of territory. The writer first visited the Big Bend in the summer of 1938 and again in 1939, specifically for cacti. Since then, I have been in constant touch with several ranchmen and natives, who were instructed to keep a sharp lookout for unusual plants not yet recorded for the region. In the fall of 1939, Mr. A. R. Davis, a very enthusiastic cactus collector of Marathon, Texas, dispatched to me an interesting pincushion cactus having the aspects of the well-known *Coryphantha macromeris,* yet definitely not that species, or any other recorded from this side of the Rio Grande.

Mr. Davis first came upon this plant in 1936, while cactus hunting in the picturesque Maravillas Canyon district of the Rio Grande River. The first plants were noticed at the head of Reagan Canyon, about 65 or 70 miles to the southeast of Marathon, at an elevation of about 3,500 feet. At that time, distribution seemed to be quite extensive in that locality, but the plants were always found growing either on the side or top of the flat limestone hills and never in the valleys. In 1941, Mr. Davis came upon this plant in another location, nearly a hundred miles to the southwest of the original site, and right on the bank of the Rio Grande. The plants were scattered over an area not approximating more than five acres in extent, but definitely in the same type of soil formation.

After making a thorough search of current literature and noting that the plant did not match anything yet recorded, it was decided to publish it as a new species. I am greatly indebted to Dr. Leon Croizat of the Arnold Arboretum for his kindly help. The new cactus is a definitely distinct plant, despite its simulating habits to two or three other species. I feel that its specific name is well earned, for its spiny armament greatly resembles a small bundle of dried twigs. The numerous interlocking greyish spines all but hide the plant body from view, as the illustrations clearly indicate. At a great distance, *Coryphantha ramillosa* may look like *C. vivipara,* but outside of this the new species does not even belong in the "vivipara group," but much sooner in the general relationship of *C. macromeris.* However, the latter plant is a rather flabby species with soft, loosely arranged tubercles while *C. ramillosa* is decidedly hard and firm in every respect.

Coryphantha ramillosa Cutak, sp. nov.: Planta simplex rarius caespitosa, globulosa, depressa, griseoviridis, 3-8 cm. alta, 6-9 cm. lata; tuberculis sat magnis ca. 2 cm. longis, basi incrassatis, 15-25 mm. latis, ex apice ad basem canaliculatis, firmis, subadpressis; aculeis radialibus 14-20, griseo-albidis, patentibus, 10-35 mm. longis: centralibus 4, evidenter longioribus crassioribusque at haud robustis, inferiore saepinus porrecto vel decurvato, primo brunneis, dein griseis apice obscurioribus. Floribus magnis, colore ludentibus pallide vel saturate roseis, ca. 65 mm. longis, 50 mm. latis; perianthii laciniis internis albicantibus in apice roseis vel rubentibus, externis pallidioribus, latioribus, viridi-lineatis: squamis subtus viridibus: filamentis brevibus ca. 7-8 mm. longis; stylo gracili, albo ca. 18 mm. longo; stigmatibus 6-7, 4-7 mm. longis; ovario albicante ca. 15 mm. longo. Caetera desunt.

Coryphantha ramillosa Cutak, n. sp.: Plant simple or sometimes clustered, globular, depressed, grey-green, white woolly at apex, 3-8 cm. high and 6-9 cm. broad; tubercles somewhat large, about 2 cm. long, rather broad at base, 15-25 mm. wide, grooved on upper side from apex to base, decidedly firm, slightly appressed below the middle to the base; areoles circular, at first white-felted, later nearly glabrate; radial spines 14-20, whitish, spreading, somewhat flattened or angled and slightly curving, rather slender or some bristle-like, 10-35 mm. long; central spines 4, definitely longer and stouter but relatively weak, 25-38 mm. long, at first dark chocolate-brown throughout or with white bases, later dirty colored or with darker tips, lower one often porrect or slightly curving downward, the upper three straight, ascending, often curving, sometimes abruptly; flowers large, showy, very variable, pale pink to deep rose purple, about 65 mm. long and 50 mm. broad when fully opened; inner perianth segments white, the upper half to third pink to purple or deep rose to crimson, 25 mm. long, only 2 mm. broad in the lower half and 4 mm. broad in the upper third, not ciliate; outer perianth segments lighter colored, broader, and with a light green stripe through the middle; scales on flower tube light green, gradually assuming a light purplish tint as they merge into the outer perianth segments; filaments short, white, attached to the tube, the topmost reaching only the bases of the stigma lobes, approximately 7-8 mm. long; pollen golden yellow to orange; style slender, white, about 18 mm. long; stigma lobes 6-7, from 4 to 7 mm. long; ovary whitish, approximately 15 mm. long; fruit not seen.

Type locality: head of Reagan Canyon, Brewster County, Texas.

Distribution: calcareous soil in the immediate vicinity of the Rio Grande River, Brewster County. Type specimen from Reagan Canyon has been deposited in the Herbarium, Missouri Botanical Garden, on sheet No. 1242260, while living material is being cultivated at the same institution.

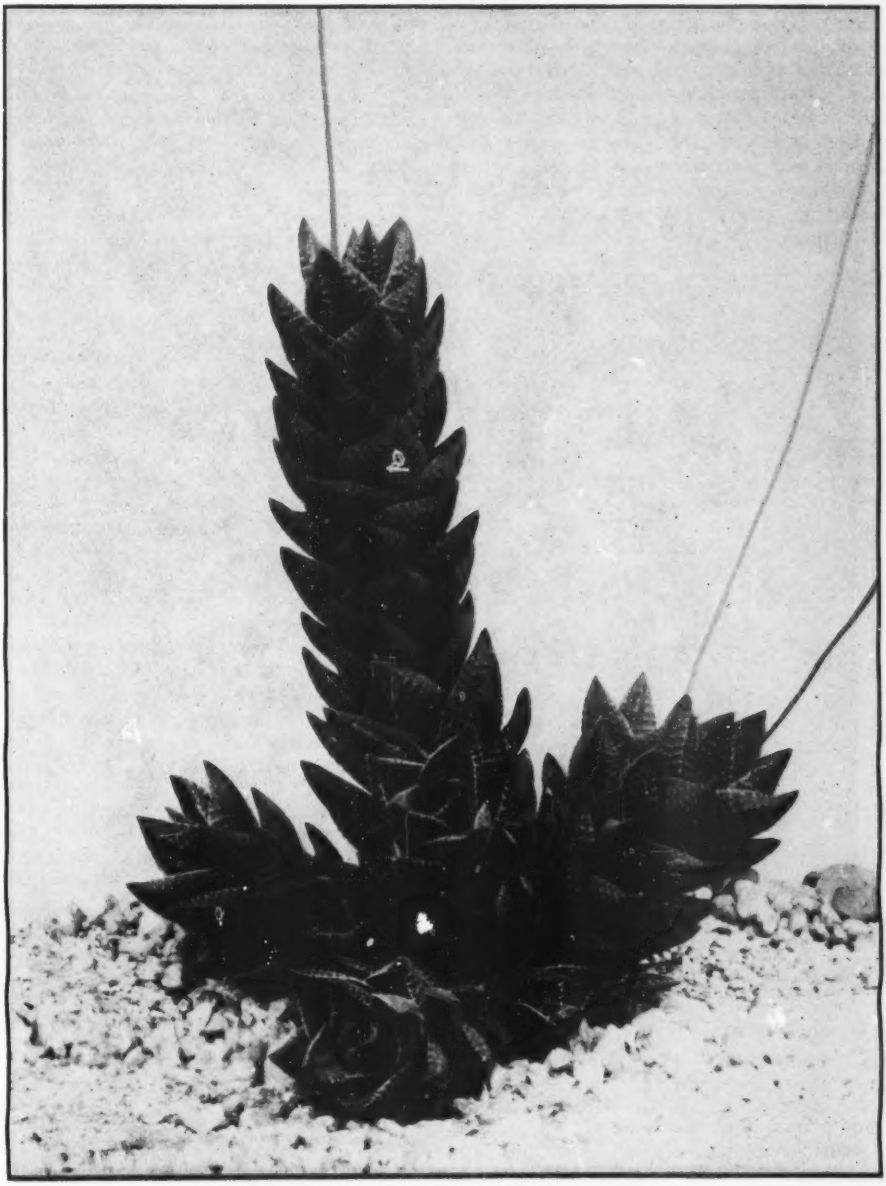


FIG. 97. *Haworthia Resendeana* Poelln. nat. size.

Notes on Haworthias

By J. R. BROWN

Haworthia Resendeana, Poelln. in Desert Plt. Life X (1938) 225, photo.
Plant with more or less erect leafy stems, 12 cm. or more tall and 3-4 cm. in diam., proliferous from the base and ultimately forming a crowded cluster.

Leaves 1.5-2 cm. long, 10-17 mm. wide towards the base, erect-spreading, ovate-deltoid, acuminate and ending in a short, brownish point, dark green, the younger somewhat shining, the older dull, face of leaves smooth, concave, especially in the younger leaves, back rounded and with numerous tubercles with a somewhat whitish tinge, round or transversely oblong, arranged in numerous lengthwise longer and shorter lines and in more or less distinct

FIG. 98. Flowers of *Haw. Resendeana* Poelln. nat. size

transverse rows, keeled from the middle upwards and often with 1 or 2 inconspicuous shorter keels, the tubercles on the lower part of leaf margins united into an irregularly crenate whitish band, becoming isolated and larger on upper margins, but shortly below the tip the margins are usually smooth.

Peduncle simple, slender, including the raceme, 30 cm. and more tall and with only 1 or 2 sterile bracts; pedicles about 3 mm. long, bracts very small, deltoid, about 1 mm. long, with a brown keel; perianth 15-16 mm. long, the tube greenish-white with broad green lines, faintly tinged rose towards the base, the white recurved segments green lined but somewhat brown towards the tips.

Locality: Unknown.

Named in honor of Dr. Flavio Resende of Porto, Portugal.

It is probably some 12 to 15 years ago since Mr. Beecroft of Escondido imported this plant from the firm of Haage & Schmidt of Erfurt, Germany, under the name of *Apicra bicarinata* and it seems to have been fairly well distributed among collectors in this country under that name.

Among some *Haworthia viscosa* seedlings raised from seed received from So. Africa were 1 or 2 seedlings which would seem to be identical or very nearly so with *Haw. Resendeana* and the writer had thought they might be hybrids between *Haw. viscosa* and some form of *Haw. Reinwardtii*, nevertheless, *Haw. Resendeana* is a very distinct and interesting plant, at a little distance it seems to be of a uniform, dark green color, the whitish color in the tubercles not being very pronounced. When grown in strong light the color of the plant is a duller, brownish-green.

It is placed in the sect. *Coarctatae* Berger, and flowers during August and September in Southern California.

A particularly fine old plant of this Haworthia was noticed in the garden of Mrs. Neff Bakkers of San Diego, the main stem of which was 18.5 cm. tall and 7 cm. in diam., the older leaves being 4.5 cm. long and 27 mm. wide. Usually, its size closely approximates that shown in the illustration.

EDITOR'S NOTE

Next issue: will start a column by our old friend Ladislaus Cutak of the Missouri Botanical Gardens; we have been promised the continuation of the column of "Cereusly Speaking;" a list of 250 common names for cacti and succulents; *Harrisia Nashii;* another installment of the Werdermann Reprint with seven pictures; and others.

George Lindsay left the following for publication: "Cactus Ranch," "The Genus Cochemiea," and "Plant Hunting in the Tarahumare Mountains of Chihuahu, Mexico" (with 42 photos).

Dr. T. MacDougall has supplied us with another story from Old Oaxaca for future publication.

Don't miss a single issue.

MOVING PICTURE FILMS

Looking ahead to post war days, your Editor is lining up a series of films for a Round-the-U.S.A. lecture trip. If you have 8 or 16 mm. films dealing with cactus, succulents, and personalities, please communicate with this office. Do not send any films now but at a later date we plan a preview. What films do you have that might be suitable Cactus and Succulent Society, Box 101, Pasadena, Calif.

FIG. 99. View of the Krantzberg in left distance, as seen from the country at its base. *Euphorbia griseola* growing on Waterberg sandstone in foreground. Photo: R. A. Dyer.

Another Botanical Trip

By R. A. DYER, Pretoria, South Africa

Not long ago your worthy Editor wrote to me and said, "What about another article? Now that the first two volumes of *The Succulent Euphorbieae* are published surely you will have time hanging heavy on your hands?" This is certainly not the position and although my time is still fully occupied I am pleased to send a few jottings which may be of interest to readers. At the National Herbarium, Pretoria, we work with a much depleted staff now-a-days owing to world hostilities. There are many calls on one's time, almost entirely without a botanical flavour. What botanical flavour there is, comes from parading on the veld and occasionally 'reading on a *Euphorbia clavarioides* var. *truncata!*

The even tenor, or monotony as some people would mistakenly regard herbarium work, was broken for three of us early in 1942, by two lightning trips from Pretoria to the Krantzberg with our ex chief. The Krantzberg of about 6,000 ft. altitude is at the western extremity of the Waterberg in the northern Transvaal, about 180 miles northwest of Pretoria. It is relatively unexplored botanically—the reason for this being its comparative remoteness and the arduous climb which faces any would-be explorer. On the first attempt we lost our bearings and had to be content with a view of the Krantzberg from its base. On the second occasion, a week later, my colleagues, Miss I. C. Verdoorn and Mr. J. Erens and I were up at 4 a. m. and on the road not long after.

The journey out was rather uneventful as regards succulents. We passed Naboomspruit which derives its name from the common name of *Euphorbia ingens* and this majestic species was prominent at several places along the road, usually on wooded hillsides. A fine group was in view of our picnic spot at breakfast, which we had in the shelter of a large tree of *Acacia* sp. Nearing the Krantzberg, *Euphorbia Cooperi* could be recognized, higher on the ridges than *E. ingens*. These two species have been so well illustrated previously that there was no call to take further photographs. A species of *Aloe* allied to *A. transvaalensis* was abundant in parts.

Arriving at a small farm house, the nearest we could approach to the Krantzberg by motor car, we were informed that a stiff four-hour climb stood in front of us and an equally arduous descent. As we had to return to Pretoria that same night it was obvious that there would be no time to spare. Actually we slightly bettered the estimated time, but not without a supreme

effort, and the use of rope to assist the party up and down some of the most dangerous portions of the "krantz" or cliffs.

We took little notice of *Euphorbia trichadenia* amongst grass on the first rocky slopes, but by the time we arrived at the cliffs we were pleased to have an excuse to admire overhanging specimens of *Aloe arborescens* and specimens of the more erect species *A. sessiliflora,* neither of which, however, was in bloom.

I should like to have reason to hold readers in suspense preparatory to disclosing an important succulent discovery on the summit of the Krantzberg; but I may not. It is true we collected what is apparently an unrecorded form of a shrubby species of *Cotyledon*—even this was not in flower. There were a few specimens of *Aloe aculeata* and a form of *Crassula nodosa,* but precious little else that could be classed as a succulent. This, of course, was more or less what one expected since, as we all know, grassy mountain tops are not the favoured haunts of succulents. Wild animals abounded in these parts at one time. Leopards are still plentiful in the mountain fastnesses and we were literally hounded down the krantzes by angry baboons, their sentries barking at us incessantly.

The view from the heights to the flats below was a grand sight. It was on the flats below the Krantzberg that my greatest pleasure was in store. There, on granite outcrops, *Euphorbia griseola* flourishes. Until the publication in 1941 of Volume II of "The Succulent Euphorbieae" this species was somewhat of a mystery to botanists, but from that work it will be seen that our records have advanced steadily towards completion within recent times. On the flats also, but in a very sandy stretch to the north of the Krantzberg, an undescribed species of *Scilla* or "squill" was collected on the first excursion. This, added to other non-succulent observations, made the brief trips most beneficial and enjoyable.

QUESTIONS AND ANSWERS

Part of a series consisting of correspondence between W. Taylor Marshall and Graham Heid in which many of the growers' problems will be discussed.

ROOT MEALIES

Dear Bill:

I don't suppose even a fairly heavy infestation of Spine-Mealy Bugs would do much damage, but it's an unsightly mess. I've long since given up the paint-brush-and-alcohol method—it's effective but after a week or two it gets very tiresome.

The Root Mealy is a very different animal. If only he'd combine the Spine Mealy's inoccuous habit with his own underground life, everything would be fine. But no such luck. I guess the mortality rate among potted plants due to Root Mealies is pretty high.

But getting around to my original problem: isn't there some good spray to clean up Spine Mealies? And isn't there a treatment for Root Mealies other than de-rooting?

Let's assume we have a potted Mammillaria. Its spines are covered with mealies, it is sickly and fails to grow, and there's a steady stream of ants crawling in-and-out of the drain hole. (And if you think this is a wild assumption drop around to my lath-house any time!) We naturally suspect the presence of Root Mealies, so let's start by getting rid of the Spine Mealies. Then treat the plant for Root Mealies; and finally get rid of the ants.

All right, Doctor, the patient is under ether; let's start sawing!

Kindest regards, GRAHAM.

Dear Graham:

Your inquiry about *Eriococcus coccineus* (spine mealy bugs to you) affords me a chance to display my entomological erudition which dates from the recent publication of Woods' excellent article in September JOURNAL.

His suggestion of the use of cyanogas for the eradication of this pest is excellent if your collection is small enough, but it is impractical in the case of a large collection or outdoor plantings with all too little space between plants. The method he suggests is to cover the infected plant with a wash tub or smaller tin such as a No. 10 can, placing a half teaspoon of the grayish cyanogas granules under the cover, but not too near the plant and leave the cover on over night. The plant must be dry as the gas will burn any damp spots on the plant. I have used this method most successfully for all scale insects.

In most cases I have found the gas method impractical because of the proximity of other plants and in such cases I use the spray method. With plants whose spines ar dark I use "Volck" in the proportions indicated on the label and find that one spraying is usually sufficient. If the spines are white or gray it is better to use "Extrax" which does not discolor light spines but this rotenone and pyrethrum spray should be applied for several days in succession.

Root mealys (my erudition falls down here as Woods did not mention this pest by name) are now easily controlled by the use of dichloroethel ether which is most easily acquired by purchasing commercial preparations such as "Lawn-a-Gen." These preparations should be applied in half the concentration recommended for lawn moths. The soil in the pot or the soil surrounding an infected plant in the ground should be moistened previous to the application of dichloroethel ether and application should be made after the heat of the day has lessened.

As ants are largely responsible for the other infestations dispensers of "Ant-B-Gon" should be distributed to effectively rid the garden of these pests.

Entomologically yours, BILL.

The more terrible the conflicts of men the more restful, by contrast, are the quiet phenomena and objects of nature. The need for the solace of growing things is pronounced when troubles convulse the world. There is inspiration and comfort in a rose.

L. H. BAILEY.

The Werdermann reprint will be continued in the January issue.

What Is a Cephalium?

By DR. LEON CROIZAT

Britton and Rose write the following of *Cephalocereus* (Cacti. 2:25. 1920): "In some species the flowering areoles develop an abundance of wool which confluently forms a dense mass called a pseudocephalium either at the top or one side near the top (*of the stem*); in others long wool or hairs grow from the areoles but a pseudocephalium is not formed."

Of the same Cactus, Werdermann has this to say (Brasil. Säulenkakt. 86. 1933): "Blüten in einem Cephalium entstehend, das aus einem kompakten, häufig mit Borsten durchsetzten Wollfilz besteht und an Stelle der Rippen schon im Scheitel angelegt wird" (Flowers borne in a cephalium consisting of woolly hairs abundantly mixed in with slender spines, which appears at the top of the stems in the place of the ribs).

It is clear from these direct quotations that Britton & Rose define as pseudocephalium (or false cephalium) the very same hairy structure called by Werdermann a cephalium (or true cephalium). Naturally, the botanist who is not directly interested in the Cactaceae, the earnest student of succulents in general and the amateur gasp for breath when they try to understand what the cephalium is, and how the true cephalium differs from the false one. When the masters disagree, the pupils are bound to wonder.

My considerate opinion is that neither Britton & Rose nor Werdermann seem to define the cephalium in full, an opinion the truth of which will be proved in the coming page. The proof of this opinion is easily given and easily understood. It is strange, as a matter of fact, that almost two centuries of botanical studies should have failed to yield a correct appreciation of "cephalia" when many professional botanists have used these structures to break up *Cereus* into several different genera.

To deal with "cephalia" in a truly scientific spirit we need not to indulge in learned verbiage and high-sounding discussion. Science is clean-cut observation and logical deduction therefrom, not speaking in a manner that only few peoples can understand.

To begin with, let us take a look at the flowering nipple of some echinocactoid plant (Fig. 1), *Pediocactus* or *Utahia*, for instance. We see the nipple (podarium) bearing the spines of the areoles in the manner which is customary with cacti. Behind the areole, there is an "eye" from which the flower appears. Obviously, the "eye" may be more or less heavily woolly than is the areole itself; in *Notocactus mammulosus*, for instance, an areole which has flowered can be recognized even after months on account of its being more hairy around than an areole which has not done so.

Let us flatten out next, so to speak, our echinocactoid plant in the manner shown in Fig. 2. Little is here changed from the condition figured for *Pediocactus* or *Utahia*. Instead of free nipples bearing their flowers from horizontal areoles, we see a smoothish long rib flowering from vertical "eyes." If these "eyes" were to yield abundant wool we would have before us a structure which many authors, botanists not excluded, call pseudocephalium or cephalium.

As our third step, let us cut open an areole of *Cephalocereus senilis* in blossom. This is what we see (Fig. 3): first, a hollow in the rib's body bearing at its lower end a tuft of bristly spines (Fig. 3, a), next above it a peculiar knob (Fig. (Fig. 3, b) which is capped by a single flower and bears on its sides the very abundant woolly growth which is characteristic of both cephalia and pseudocephalia. Naturally, a plant that, like *C. senilis*, bears flowering areoles all around its stems also carries a full cephalium. If, on the contrary, the flowering areoles are borne along one of the ribs only, the cephalium is narrow and lateral. To put this in other words: the cephalium *streams* out of the flowering areoles, hence its size depends from the number and position of these areoles in the first place.

Having learned this much, we turn to *Myrtillocactus*. This plant bears its flowers—which are small and comparatively numerous at each areole—upon a peculiar hairy excrescence. Some students of the Cactaceae have mistaken this excrescence for a diseased growth. The truth is plainly different: this outgrowth (Fig. 4) is a much reduced flowering branchlet. This branchlet is essentially the same as any other flowering branchlet, a cluster of *Wisteria*, for instance. The difference between the inflorescence of *Wisteria* and that of *Myrtillocactus* is one of degree, not of quality. In *Wisteria* the inflorescence is evidently branch-like, scantily hairy, much longer than broad; in *Myrtillocactus*, on the contrary, the inflorescence is gnarled, definitely hairy, often broader than long. The basic similarity between these structures is shown when sections are taken, for then the wood of the inflorescence of *Myrtillocactus* is seen to

have the pattern of a branched-out body just as shown in my sketch.

From *Myrtillocactus* to *Neoraymondia* the step is short. In the latter (Fig. 5) the inflorescence is much better developed than in the former. One of the areoles of a specimen of *Neoraymondia* in the herbarium of the New York Botanical Garden carries a cephalium which almost exactly matches that of a *Melocactus,* the whole difference being here that in *Neoraymondia* the cephalium is lateral while it is terminal in *Melocactus.* Such a difference, once again, cuts little ice: there are Sumacs which bear their flowers at the end of the branches and other Sumacs which carry them on their sides, the majority of the authors being agreed that all these Sumacs belong to the same genus *Rhus.* We have no reason to be surprised when we find Cacti behaving like Sumacs, for Cacti, too, are plants.

From *Myrtillocactus* to *Lophocereus* the step is just as short. However, in *Lophocereus* (Fig. 6) the inflorescence is reduced, not better developed by comparison with that of *Myrtillocactus.* Let us notice that the flowers of *Lophocereus,* too, are small when compared with those of *Cereus* and other genera in the vicinity of *Cereus.*

Let us now suppose that the inflorescence of *Myrtillocactus* (1) is very hairy instead of moderately so; (2) sinks into the rib and the areole instead of growing out of them; (3) carries one flower instead of two or more. These suppositions do not make too great a claim upon our imagination and credulity: we currently take for granted—as a matter of fact—that the inflorescence of species in the same genus may be more or less woolly, more or less elongated, more or less many-flowered. Accordingly, translating these three suppositions into a sketch (Fig. 7), we see something appear which compared with Fig. 3 tells us that the cephalium—so called—of *C. senilis* and the peculiar inflorescence of *Myrtillocactus* are basically the same structure. One is long-woolly rather than short-hairy, sunk in rather than grown out, single-flowered rather than many-flowered, whitish rather than grayish. This is all, and is not much after all.

We know by now well enough to picture the evolution of the inflorescences of Cacti in the manner shown by Fig. 8, 9, 10 and 11. The history of this evolution can be expressed by a word: *reduction.* The inflorescence has become progressively shorter and more adapted; it has, so to speak, grown backward into the areole, being eventually reduced to a speck of living matter that gives birth to the flower at the bottom of the "eye."

Can a *scientific* distinction be drawn between cephalia and false cephalia? *Assuredly not*: endless degrees of evolution connect the inflorescence of *Mammillaria* with that of *Neoraymondia.* Some plants, like *C. senilis,* carry huge cephalia because their stems are beset all around by flowering areoles, and each one of these areoles yields an abundance of wool from the inflorescence hidden within. Other plants, like *C. Lehmannianus,* are "cephalic" only on the side of their stems because only the areoles of certain ribs are capable of bearing flowers. *Pilocereus chrysostele* has some areoles so thickly woolly as to form a structure called by Werdermann (op. cit., 103) a "kind of pseudocephalium." However, *P. Arrabidae* is scracely woolly. In brief, take it or leave it, every species in the *Cephalocereus-Pilocereus* group obeys pretty much its own laws, precisely as every species in the Cactaceae has spines and areoles of its own. The cephalium is a specific and a sectional character, hardly a generic one. This, of course, does not apply to *Melocactus,* which—to a much greater extent than *Cephalocereus* and *Pilocereus* —has become specialized in its manner of growth. Proof that the cephalium cannot always be used as a generic character is easily given. Misled by the cephalium's presence, as it seems, Britton & Rose put together *Cephalocereus leucocephalus* and *C. senilis.* It is known to all that the fruits of these cacti are altogether unlike, hence the question: How could Britton & Rose use the characters of the fruit to create many more or less tenable genera, and be blind at the same time to the essential differences between the fruit of *C. leucocephalus* and *C. senilis?* There is but one answer to this pointed question: Britton & Rose were unable to interpret the cephalium correctly, and mistook it for a generic character which the cephalium here is assuredly not.

Werdermann puts together *Arrojadoa* and *Cephalocereus.* How this can be done is a mystery. The fruit of *Arrojadoa* is defined by Britton & Rose (Cact. 2: 170. 1920) as a "small, oblong, naked, juicy berry." The fruit of *C. senilis* is anything but "small, oblong, naked, juicy" for it is fairly large, more or less broadened out, hairy and dry. How could Werdermann be blind to these essential differences, putting at the same time so much stress in his work upon the characters of the fruit to separate *Cephalocereus* from *Pilocereus?* Once more, there is only one answer to this question: Werdermann, too, proved unable to interpret

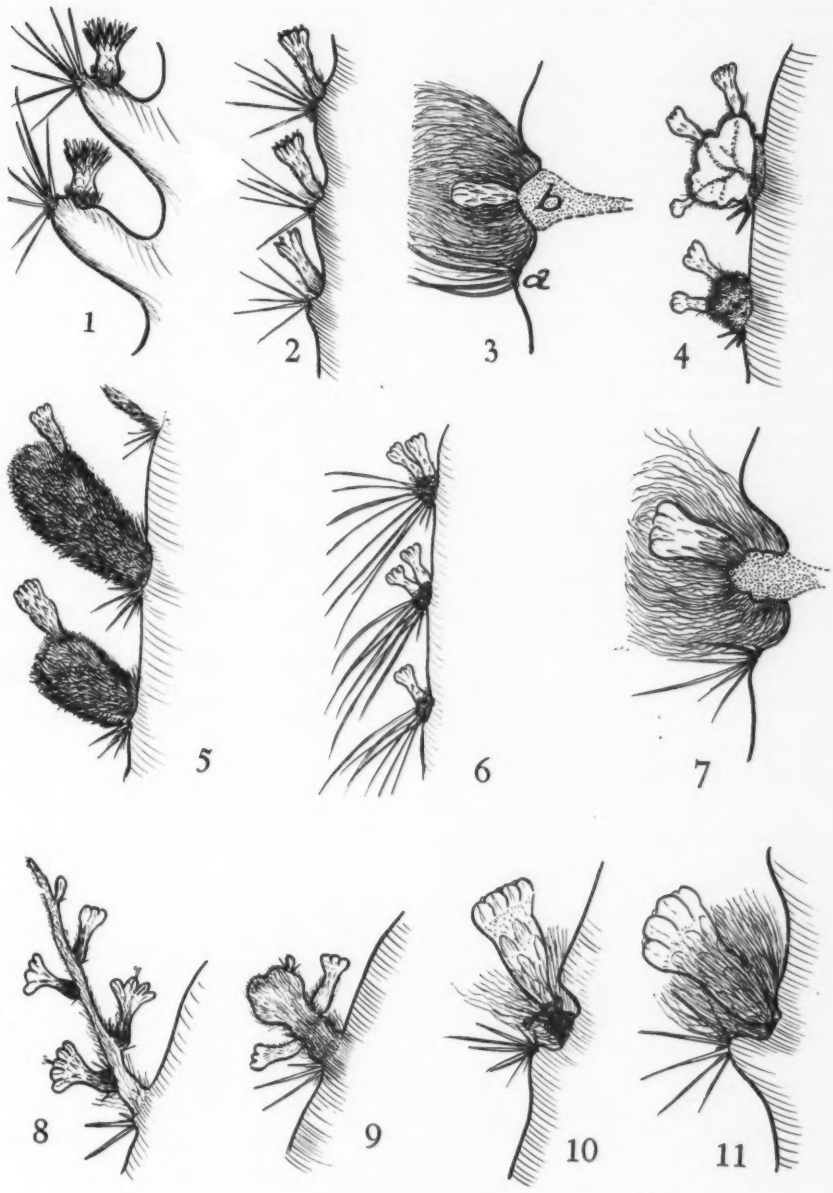


FIG. 100

the cephalium correctly, and mistook it for a generic character, which the cephalium is here certainly not.

In conclusion: the kind of classification which relies upon distinctions between cephalia and pseudocephalia and the like to effect generic grouping in the vicinity of *Cereus* is on the wrong track. As it insists upon characters that are non existent, this classification aimlessly flounders and its proponents merely repeat fallacies which should have been exposed the very first time they got into print.

The reader should be warned that the sketches with this article are meant to emphasize certain points, not to picture accurately every unessential detail. The flowers, for instance, are not a precise rendition of the originals: they are fairly placed, however, to show that they arise from structures of the same kind (see Fig. 3, 4, 5, for example). In Fig. 3 and Fig. 7 the areole is shown in section to illustrate the "knob" bearing the flower, this "knob" being what in technical language would be called a flower-bearing brachyblast or an adapted florigerous axis. In Fig. 4 one of the projections from the areole of *Myrtillocactus* (upper one) is figured with one of the sides removed so as to show the run of the "woody fibres," that is, properly speaking, of the fibro-vascular connections leading to the primordia of the flowers. I expect to discuss elsewhere finer sides of the evolution illustrated summarily in these pages.

The reader who feels that this short article has contributed some light should be grateful to the friends who have undertaken to supply me with material. Here I may merely mention a few: Mr. W. Hertrich, Mr. W. T. Marshall, Mr. F. Schmoll, Dr. C. Boissevain, Dr. B. P. Reko, Mr. R. H. Peebles, Mrs. J. H. Hyde, Mr. G. Lindsay, Mr. Scott Haselton, Mr. Lad Cutak, Mr. A. R. Davis, to all of whom go my sincere thanks. It is they who by sending material have made it possible for me to learn something which could not be found written even in the best libraries of the world.

CHECK LIST OF HAWORTHIAS

Compiled by H. C. SHETRONE

This Check List was compiled by the writer for his personal use in identifying the plant material which it covers. It is tentative, it is not exhaustive, and it is not free from errors, since time has not permitted a re-check of the data recorded. There may exist a better check list or a bibliography on the Haworthias; if so, this writer has not seen it. The editor of the JOURNAL will know, in which case this copy will be consigned to the editorial waste basket.

We have consulted only such sources as may be available to American collectors, which should suffice for the present purpose. These are as follows (with abbreviated references):

Berger: Alwin Berger, German botanist and his classic contribution on the Haworthias and their relatives, in "Das Pflanzenreich" (Leipzig, 1908; text in German, descriptions in Latin.)

J. R. B.: J. R. Brown, American authority, in Desert Plant Life magazine and the Cactus and Succulent Journal. (Current publications.)

von Poell.: Dr. Von Poellnitz, In Desert Plant Life magazine.

Journal: The Cactus and Succulent Journal. Citations under this heading refer exclusively to "Notes on Haworthias" by J. R. Brown.

Jacobsen: H. Jacobsen, in "Succulent Plants;" English edition (London, 1935).

van Laren: A. J. van Laren, "Succulents other than Cacti;" (English edition, Los Angeles, 1935).

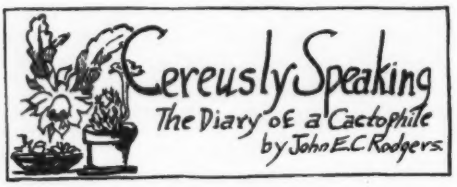
Succulents: "Succulents for the Amateur" by Brown, White, Sloane, Reynolds; (Los Angeles, 1939).

Star (*): Indicates, in addition to a description there is an illustration.

HAWORTHIA Duval:

H. aegrota v. P.: von Poellnitz in Desert, Dec., '39 *.
affinis Bak.: Berger.
albanensis Schoenl.: J.R.B. in Desert, Jan. '37 *.
albicans Haw.: Berger *.
albicans var. *virescens* (Haw.) Bak.: Berger.
altilinea Haw.: Berger; Jacobsen *; Succulents.
angustifolia Haw.: Berger; Succulents *.
angustifolia var. *albanensis*: Succulents.
arachnoides Haw.: Berger; Jacobsen; Succulents.
Armstrongii v. P.: Journal X, 8 *.
asperiuscula Haw.: Berger *.
asperula Haw.: Berger; Jacobsen; van Laren.
atrovirens Haw.: Berger; Jacobsen *; Succulents *; van Laren *.
attenuata Haw.: Berger; Jacobsen; Succulents *; Journal XIII, 8 *.
attenuata var. *clariperla* (Haw.) Bak.: Berger; Jacobsen.
bilineata Bak.: Berger.
Blackbeardiana v. P.: von Poellnitz in Desert, Aug. '37 *.
Bolusi Bak.: Berger; Jacobsen; Succulents *; van Laren *.
Bolusi var. *aranea* Berg.: Berger *.
Bolusi var. *semiviva* v. P.: Journal XIII, 6 *.
Browniana v. P.: von Poell. in Desert, Sept. '37 *.
caespitosa v. P.: von Poell. in Desert, Aug. '37 *.
Cassytha Bak.: Berger.
Chalwinii Marl. et Berg.: Berger; Journal XII, 4 *; Succulents.
clariperla Haw.: Jacobsen.
chloracantha Haw.: Berger *.
coarctata Haw.: Berger *; J. R. B. in Desert, Sept. '35 *; Jacobsen *; Succulents *.
columnaris Bak.: Berger.
Cooperi Bak.: Berger; Jacobsen; Succulents.
cordifolia Haw.: Berger.
cuspidata Haw.: Berger; Journal IX, 12 *; Succulents *.
cymbiformis Haw.: Berger *; Jacobsen *; Succulents *; van Laren *.
cymbiformis var. *obesa* v. P.: von Poell. in Desert, June '39 *.
cymbiformis var. *obtusa* (Haw.) Bak.: Berger.
dentata (?): Jacobsen.
denticulata Haw.: Berger *; Journal IX, 11 *; Succulents *.
Dielsiana v. P.: Journal X, 4 *.
diversifolia v. P.: Journal IX, 8 *.
Eilyea v. P.: Journal X, 8 *.
Englerii Diet.: Jacobsen (see *tesselata*).
fasciata (Willd.) Haw.: Berger *; Journal X, 2 *; Jacobsen *; Succulents; van Laren *.
fasciata var. *caespitosa* Berg.: Berger *; Journal IX, 10 *.
fasciata var. *major* Salm.: Berger.
fasciata forma sparsa v. P.: Journal XII, 2 *.

gigas v. P.: Journal IX, 7 *; Jacobsen; Succulents (*H. setata* var. *gigas* *).
glabrata (Salm.) Bak.: Berger.
glabrata var. *concolor* Salm.: Berger.
glabrata var. *perveridis* Salm.: Berger.
glauca Bak.: Berger; von Poell. in Desert, March '37 *; Journal XIV, 3 *.
gracilis v. P..: von Poell. in Desert, Aug. '37 *.
Greenii Bak.: Berger.
Haageana v. P.: Journal XII, 7 *; Succulents *.
habdomadis v. P.: von Poell. in Desert, May '39 *.
Herrei v. P.: von Poell. in Desert, Mar. '37 *.
Hilliana v. P.: von Poell. in Desert, Sept. '37 *.
Hurlingii v. P.: Journal XII, 1, *.
Hurlingii var. *ambigua* v. P.: Journal XII, 1 *.
hybrida Haw.: Berger.
incurvula v. P.: J. R. B. in Desert, April '36 *.
Jacobseniana v. P.: von Poell. in Desert, Sept. '37 *.
laeteganae v. P.: von Poell. in Desert, Sept. '37 *.
laetevirens Haw.: Berger; J. R. B. in Desert, July '35 *; Succulents *.
limifolia Marl.: Journal XIII, 1 *; Jacobsen *.
longiana v. P.: von Poell. in Desert, July '37 *.
McLarenii v. P.: von Poell. in Desert, June-July '39 *.
Maraisii v. P.: Journal XII, 11 *.
margaritifera (L) Haw.: Berger *; J. R. B. in Desert, Dec. 34 *; Succulents *; van Laren; Journal XIII, 9 *.
margaritifera var. *corallina* Bak.: Berger.
margaritifera var. *erecta* (Haw.) Bak.: Berger; Jacobsen; Succulents *.
margaritifera var. *granata* (Willd.) Bak.: Berger; J. R. B. in Desert, Jan. '35 *.
margaritifera var. *semi-marg.* (Salm.) Bak.: Berger; Succulents.
margaritifera var. *subalbicans* Salm.: Berger.
margaritifera var. *typica* Berg.: Berger.
Maughanii v. P.: J. R. B. in Desert, April '37 *; Jacobsen *; Succulents *.
minima Bak.: Berger; Journal XIII, 11 *; Jacobsen; Succulents *.
minutissima v. P.: von Poell. in Desert, Dec. '39 *.
mirabilis (Willd.) Haw.: Berger *; J. R. B. in Desert, June '36 *; van Laren.
nigra (Haw.) Bak.: Berger.
nitidula v. P.: von Poell. in Desert, Dec. '39 *.
pallida Haw.: Berger; Jacobsen.
papillosa (Salm.) Haw.: Berger; J. R. B. in Desert, Nov. '34 *; van Laren.
papillosa var. *semi-papillosa* Haw.: J. R. B. in Desert, Nov. 34 *.
paradoxa v. P.: von Poell. in Desert, Aug. '37 *; Journal X, 1 *; Jacobsen.
picta v. P.: Journal XII, 11 *
pilifera Bak.: Berger *; Journal X, 6 *; Jacobsen; Succulents *.
Peacockii Bak.: Berger.
pellucens Haw.: Berger *.
planifolia Haw.: Berger; Journal X, 9 *; Jacobsen *; Succulents *.
pygmea v. P.: Journal XIII, 5 *.
radula (Jacq.) Haw.: Berger *; J. R. B. in Desert, Mar. 35 *; Jacobsen; Succulents *; van Laren.
recurva Haw.: Berger.
Reinwardtii Haw.: Berger *; Journal XII, 3 *; Jacobsen; Succulents *; van Laren *.
Reinwardtii var. *major* Bak.: Berger; Journal XII, 5 *.
Reinwardtii var. *minor* Bak.: Berger.
Resendean v. P.: von Poell. in Desert, Dec. '38 *.
reticulata Haw.: Berger; Jacobsen.
retusa (L.) Haw.: Berger *; J. R. B. in Desert, June '35 *; Jacobsen *; Succulents *; van Laren *.
retusa var. *mutica* Haw.: Berger.
rigida Haw.: Berger *; van Laren.
rigida var. *expansa* (Haw.) Bak.: Berger.
H. rugosa (Salm.) Bak.: Berger; van Laren.
rugosa var. *pervirides* Salm.: Berger.
Ryderiana v. P.: von Poell. in Desert, Sept. '37 *.
Ryneveldi v. P.: von Poell. in Desert, May '39 *.
scabra Haw.: Berger *; Jacobsen.
Schmidtiana v. P.: J. R. B. in Desert, July '36 *; Jacobsen *; Succulents *.
Schmidtiana var. *elongata* v. P.: J. R. B. in Desert, Jan. '38 *.
Schuldtiana v. P.: von Poell. in Desert, Sept. '37 *.
semiglabrata Haw.: Berger.
sessiliflora Bak.: Berger.
setata Haw.: Berger *; Journal XII, 6 ; Jacobsen *; Succulents *; van Laren *.
setata var. *gigas* v. P.: Succulents *.
setata var. *major* Haw.: Berger.
setata media Haw.: Berger.
setata nigricans Haw.: Berger.
setata xiphiophylla v. P.: Journal XII, 6 *.
sordida Haw.: Berger.
Starkiana v. P.: J. R. B. in Desert, Nov. '35 *.
subattenuata (Salm.) Bak.: Berger.
subfasciata (Salm.) Bak.: Berger.
submaculata v. P.: von Poell. in Desert, Dec. '39 *; Journal XIV, 1 *.
subregularis Bak.: Berger; van Laren *.
subulata (Salm.) Bak.: Berger; van Laren.
tesellata Haw.: Berger; J. R. B. in Desert, Feb. '37 *; Jacobsen *; Succulents *; van Laren; Journal XIV, 4 *.
tesellata var. *Engleri* Dint.: Journal X, 12 *; Succulents; van Laren *.
tesellata var. *inflexa* Bak.: Journal XIV, 8 *.
tesellata var. *parva* Bak.: Berger *; Journal IX, 9 *; Jacobsen *; Succulents *; Journal XIV, 8 *.
tortuosa Haw.: Berger *; Journal XIV, 2 *; Jacobsen; Succulents *; van Laren.
Triebneriana v. P.: von Poell. in Desert, Sept. '37 *.
truncata Schoenl.: Journal IX, 6 *; Jacobsen *; Succulents *; van Laren *.
tuberculata v. P.: J. R. B. in Desert, Aug. '35 *.
tuberculata var. *subexpansa* v. P.: Journal XIV, 1 *.
turgida Haw.: Berger *; J. R. B. in Desert, Mar. '36 *; Jacobsen *; Succulents *.
turgida var. *suberecta* v. P.: Journal XIII, 3 *.
variegata Bolus: Journal XII, 8 *.
venosa (Lam.) Haw.: Berger; J. R. B. in Desert, May '35 *.
viscosa (L.) Haw.: Berger; Jacobsen; Succulents *; van Laren *.
viscosa var. *caespitosa* v. P.: von Poell. in Desert, Jan. '39 *; Journal XIV, 8 *.
viscosa var. *concinna* Bak.: Berger *; van Laren *.
viscosa var. *indurata* (Haw.) Bak.: Berger.
viscosa var. *pseudo-tortuosa* (Salm.) Bak.: Berger; Journal XIV, 6 *.
viscosa var. *sub-obtusa* v. P.: von Poell. in Desert, Jan. '39 *.
viscosa var. *torquata* (Haw.) Bak.: Berger.
viscosa var. *typica* Berg.: Berger.
vittata Bak.: Berger.
Whitesloaniana v. P.: von Poell. in Desert, Sept. '37 *.
xiphiophylla Bak.: Berger.
Zantneriana v. P.: von Poell. in Desert, Aug. '37 *.



PART XI
November in Ohio

November 1. In Cleveland at the Cleveland School of Art I saw Nola Rarich's painting of *Hylocereus triangularis* which she painted while in Hawaii. Must be a wonderful sight, that wall with "night blooming cereus" covering it. *Euphorbia grandicornis* has buds. Blooms along the ridges of those heavily armed horny edges.

November 3. Took my *Crassula argentea* which has been on the side-porch up to now, back to school. Stands on my desk during the winter months. Well developed buds on 20 or more branches. Have kept it pot bound—at least for the last two years. I couldn't see it reaching the ceiling since it flourishes like a "greenbay tree." Not difficult to keep it in shape for my eager students want every scrap I cut off. Once in a while I find an imprint of a finger nail in the soft leaves. Then I explain that it is better to depend on the drinking fountain outside the door for although this plant is a marvelous reservoir, it stores water for its own use. It's so hard to correct pseudo-scientific information. In 1940 I noted that there had been only 88 days of sunshine since the first of the year. The fewest since 1934 when I started my diary. The average is 120 days per year in this land of "smog."

November 6. Well, we have had 111 of our allotted 120 days of sunshine in 1942. Haven't given any water to my plants since October 21. None seem to suffer. Paper promises snow but none to date. *Selenicereus hamatus* is keeping on with its foot a week growth which it started this summer. If it doesn't soon decide to be "dormant," I will have to guy-wire the whole greenhouse like a spider web for it.

November 8. Hatiora salicornides budded, although the buds are small. *Frailea grahliana,* the most decorative of this genus and not more than an inch in diameter is a mass of offsets around the base. In 1939, I see that I wrote to Ernest Schmidt, a case student who was interested in cacti, who wanted to know some "cure-alls" for several pests which he (all of us) had in his greenhouse. I recommended cyanogas for plants which were thoroughly dry at the roots. Volck for scale and mealy bug, although I dislike this solution for the oily residue it leaves on the plants. (I hadn't used Shep's at that time and as I have mentioned before, I do like it better. It is effective and leaves no disfiguring blotches.) I told him too, about using a naptha soap solution for a spray and wash for aphids, etc. Another good idea which I did not mention at the time is to segregate the diseased plant, put on your hat, and go calling on your cactus dealer friends until you find another plant of the same variety. Take the new, disease-free plant home, and now assured that your collection is still numerically intact, cremate the diseased plant. That is the most certain "cure-all" I know, especially for that persistent brownish scale. There is no priority on healthy plants at the present, but there is on insecticides. Don't waste them.

November 10. For the second year, my question "Does *Lepismium* (cruciformis) *communis* bloom at the same areoles as it did in former years?" has been answered. It does. I marked the areoles with spines where they bloomed last year. They bloomed at the same point this year. My plant has fruit, blooms and buds all at the same time. If Epiphyllums would bloom from the same areoles, I would not have to house such large plants in order to enjoy their blooms. *Euphorbia canariensis* with its greenish coppery tones, grew over four inches this summer. *Rhipsalis grandiflora* (funalis) usually keeps on growing for me during the whole year, but true to form is slowing up just before it blooms. I will watch carefully for signs of buds. Normal temperatures for this day here is 43°. But the thermometer registers a full 10 degrees colder today.

November 14. Checked plants in basement which I though several years of experience have found winter well in a medium cool, medium lighted spot. Large Epiphyllums have slowed down. New shoots are hardening up. Have not tried Euphorbias in the basement since I had such poor results with *E. lactea.* No doubt my very porous soil and clay pots were partially responsible for its downfall along with my spasmodic watering habits. Agaves begin showing etiolation within two weeks after storage. Does not injure them as they recover rapidly on a terrace during the summer.

November 16. Doesn't seem possible, but it is four years ago that Scott Haselton asked me if my diary could be used some way in the JOURNAL.

November 15. Were at Carments today, in Parma, for a meeting of the Midwest Society meeting. The tire situation, the army, and the Defense Work program has cut our attendance down to 17, but we still had enough to have a grand meeting. A consignment of plants from the Houghton Gardens was sold out in ten minutes time. Members were pleased to own cuttings from plants collected by the author of "The Cactus Book." Jim showed us his pictures of his trip through Glacier National Park and pictures of cactus and succulent blooms from local collections and the Huntington Gardens which he has recently added to his collection of Kodachrome slides. *Opuntia compressa* is hugging the ground, wrinkled and spine laden. There'll be no bursted stems when winter really comes. These plants have their own anti-freeze.

November 18. Those expanding ether discs on my Toledo Model Brooder stove, certainly do control the heat. (Use Hard coal). Keeps the greenhouse at 55 degrees night temperature. I make my Pereskias deciduous each winter by withholding water. Evidently the vining stems grow at this time as mine are all bush with thick stems and few spines. Other collectors around here keep their Pereskias growing the year around. Their plants are vining and have more spines. Stems are thinner than mine. *P. bahiensis* has bloomed for me. Others have not. My Pereskiopsis which lean more to the succulents than Pereskia, stand longer periods without water and keep their leaves.

November 20. No matter how much I try, Euphorbias from India lose their large leaves during the winter. I have three varieties that do this: *royleana, caducifolia,* and *nivulia.* They are supposed to have been from seed collected by the British when they took over two little mountainous states between China (Tibet) and India. One that I have marked "Barnhardtii" is also from seed of this expedition. I prize them highly, I often wonder if they are as rare as I try to think.

November 22. The three *Euphorbia splendens* add color to my collection. Their cheery red blooms help me to say there is always something in bloom in my greenhouse. *Rhipsalis Houlettiana* is a picture right

now. Its long leaves are fringed with creamy white blossoms.

November 24. Consolea rubescens has two side shoots. Got a second variety of *Wilcoxia Schmolli* with brown tufted spines at end of stems. So far have only the promise of that Wilcoxia which has thin white woolly stems.

November 26. 33 degrees at 4 a. m., according to the coast guards. Finally got a card index started for magazine articles and then found the magazines I had laid out had all been put away while I was sweating over a card file. *Zygocactus truncatus,* true to its name, bloomed on Thanksgiving day.

PART XII

December in Ohio

December 1. Zygocactus truncatus has its last blooms opening today. Has bloomed nicely since before Thanksgiving. It made a lovely centerpiece for our Thanksgiving dinner. It is the typical old fashioned "crab claw." Now the Christmas Cactus has buds about ⅔ inch long. Buds started on *Crassula multicava,* one of the "decoratives" of my collection. Is one that grows over the side of a dish garden in a graceful manner. "Succulents for the Amateur," Fig. 156, shows this plant, but its color is the most delicate rose-pink-cluster-of-stars imaginable. *Euphorbia mammillaria "major"* which is now over 3 feet tall, is a puzzle to collectors who see it. It has *"minor"* characteristics in everything but size.

December 2. Feasted my "succulent eye" on *Cheiriodopsis candidissima* which I added only a year ago today to my collection. It is indeed "most white." In spite of my few *Lithops,* I do like them. Have given plants of this genus as gifts at different times because they intrigued me so. Perhaps their reputation of being difficult to grow is against them. I shan't say. In 1940, anxiously examined plants which were in the Elyria greenhouse, for freeze damage. The circulatory system of the heating plant failed to circulate and that on a freak cold day of a mere 4 degrees (which later proved to be the coldest day of the month). Plants nipped have now recovered but that day I was one gloomy cactophile. *Pelargonium echinatum,* one of the victims, now has three heads where there was one before. *Euphorbia Barnhardtii* lost one arm, but has four more. *Pereskia grandifolia* lost its leaves, but they have grown again. Why it was that these three plants, at three different spots in the collection were damaged and nothing else, I know not.

December 6. Although my greenhouse is a lean-to, it has only 7 feet of house to lean against, leaving an 8 foot by 8 foot "window" to the north, I had this section set at a slight angle—just enough to reflect light under the south benches where I store my Sansaverias, Agaves, and Epiphyllums. Use Selenicerei as "drapes" at my north window. Decorative as well as being the right spot for them.

December 7. A year has passed. Wonder where my Japanese friends so interested in American cacti are. Especially the ones who were engineers by profession. One gave me a copy of a very interesting study he had made on the bridges in China. He was selling plants in a Cleveland Department store at the time.

December 9. Aloe striata is one of the nicest in my collection. Silvery-green, with coral-pink edges. *Aloe vera* is much too large for a small greenhouse. But I keep it up on a side shelf out of the way. Aloes are too easily broken for any roughness. Last year I tried crushed *Aloe arborescens* leaves on a burn. Worked—but then, the burn was not a serious one.

December 15. Sanseveria cylindrica budded. Have to sprinkle my plants over the top more frequently with the dry heat afforded by the coal stove. Buds on *Rhipsalis* (funalis) *grandiflora* and *cassutha,* also *Cereus Mallisoni. Pereskia godsefiana* has started to get new leaves. Lost them when I failed to water it. Keep my Pereskias and Pereskiopsis under bench where they get some light during the winter rest period. In 1937, the Rodgers genus produced another offset. We called her Nancy Lee and she is a healthy specimen at the moment.

December 17. Sterilizing pots for early spring use. So many of those used have been gifts from Irene Gallagher, a local artist with flowers. Sells succulents but like the rest of us, find they need plenty of light so she cannot keep them long. Lou Carek, another of our florists here, has a greenhouse back of his shop on Broadway with plenty of light so succulents thrive for him.

December 20. The first third-Sunday of the month in six years that the cactophiles in this section have not met. Nothing short of a world war could have done that to us. We are looking forward to our January meeting with Dr. Machwart in Parma. His home is 2 miles from a street car, but we all decided we would try to get there. Several members are saving their 4 gallons for the Midwest Meeting—not all social, either. They'll charge it off to morale building, I guess. *Haworthia cuspidata, Rhipsalis cereuscula,* and *Schlumbergera Gaertneri* budded. About this time last year, I wondered if the large Stapeliae would winter well. If I keep them dry, they wither at the ends; and if I keep them moist, they grow long and sprawly. All of us in this district find the same fault with this interesting genus. On this date last year, I was way ahead of my spray program, but this year I am fortunate to find time for any greenhouse work at all, what with the school, the steel mill, and other things that claim priority on my time.

December 22. Were in Cleveland on a "field trip"—as we in Ohio know them. Visited Woolworth's, Kresge's and McCrory's plant concessions. Selection was limited, but I did find a *Chameocereus* hybrid which is an inch in diameter; offsets freely, perhaps it is *Pragochameocereus crassicaulis,* a *Lobivia* hybrid; Marshall and Bock mention it on Page 125.

December 25. Bud on *Aporocactus flagelliformis* grafted on *Selenicereus pteranthus,* which grows all winter if I water it regularly. At present this plant has 15 15-inch stems, 6 of these have from 2 to 4 end shoots, the results of a voracious grasshoppers foraging in the upper regions of my greenhouse this summer.

December 26. Rigged up a platform of wire mesh on which I set my cutting box so heat could circulate beneath it. In my other greenhouse, I had a baffle plate above the heat outlet on which I set my sand box. Worked. Can root cuttings year around this way. Especially with a dip in "root-grow" before I set them in sand.

December 27. Graptopetalum amethystinum and *Bryophyllum tubiflorum* budded. In past years I have visited collectors within a radius of 25 miles or so during the holidays. I have recorded visits to Mrs. Lynds Jones in Oberlin, who winters her plants on shelves in a cool sunroom with an east exposure. Her plants are mostly dormant this time of the year. Sedums get straggly. L. C. Dubach at Wellington, has a greenhouse. Grows tomatoes in the winter, geraniums in the early spring, and vegetable plants later. Always keeps a fine collection of Johnson's plants on hand for his cactus customers. Bought some fine specimen plants of *Aloe variegata* and *Mammillaria Schiedeana* last year. Miss Dorothy Hughes, another Wellington resident, and a customer of Mr. Dubach's, has an interest-

ing collection of plants, knows their names, and keeps them all in pretty pottery and glass containers. Has a south and west window seat for them.

December 28. In 1938 was asked to speak over WTAM on a program for the Garden Center for January 18, on some phase of cactus and succulent culture.

December 29. Schlumbergera russeliana is still in bloom. It certainly has been a Christmas joy in our home this year. My large plant is on its own roots. Dr. Machwart of Parma, has one grafted on a tall Pereskia stalk and supported with a glass hoop. It is a striking ornamental piece when in bloom.

December 31 Jottings as the Years End

1938. The end of my five year plan. Have been faithful in recording my observations. Habits form easily. Both my collection and my waist line have increased. Excess of temperature, 1,262 degrees. A little more weather like this and our chambers of commerce in Ohio can say, "Come to Ohio for the Winter."

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